

U.S. Patent Application Serial No. 10/645,853
Amendment filed June 11, 2007
Reply to OA dated March 14, 2007

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): [[A]] ~~An switch device~~ operating device for controlling a signal, comprising:

a rotatable operation unit;

a detecting section that detects the rotation of the operation unit;

a base section that rotatably supports the operation unit;

a shaft provided on the base section, the shaft being arranged in a direction aligned with the radial direction of the operation unit; and

a plurality of rollers, which are arranged on the base section, extending in one plane in a radial direction of the base section rotatably supported by the shaft, the rollers being in contact with a (bottom) side of the operation unit to support the operation unit[[;]]

an operation unit which is rotatably mounted on the base section, with a circumferential edge supported on the rollers; and

a rotation-detecting section, which is provided on the base section and detects the rotation of the operation unit .

U.S. Patent Application Serial No. 10/645,853
Amendment filed June 11, 2007
Reply to OA dated March 14, 2007

Claim 2 (Currently Amended): The ~~switch device~~ operating device according to claim 1, wherein each of the rollers has ~~[[a]]~~ an elastic roller part, which contacts the circumferential edge of the operation unit.

Claim 3 (Currently Amended): The ~~switch device~~ operating device according to claim 1, wherein the rollers are disposed on the base section via an elastically deformable elastic member, the operation unit moving up and down in a direction orthogonal to a rotary plane of the operation unit ~~the operation unit comprises a approximately disc-shaped top plate and a projection which projection protruding from the top plate in a direction intersecting with the direction the top plate is depressed and being allowed to move on the rollers, with its lower surface contacting the rollers.~~

Claim 4 (Currently Amended): The ~~switch device~~ operating device according to claim 1, wherein the base section has a plurality of guide pins which protrude toward the operation unit, the operation unit has a guide groove which is made in a surface opposing the base section, and the guide pins are slidably inserted in the guide groove to slide ~~[[in]]~~ within the guide groove.

Claim 5 (Currently Amended): The ~~switch device~~ operating device according to claim 3, wherein the base section has a plurality of guide pins which protrude toward the top plate of the operation unit, the top plate has a guide groove which is made in a surface opposing the base section and which extends in the circumferential direction of the operation unit, and the guide pins are slidably inserted in the guide groove to slide ~~[[in]]~~ within the guide groove.

Claim 6 (Currently Amended): The ~~switch device~~ operating device according to claim 5, wherein said plurality of guide pins are positioned at substantially the same distance from the center of the top plate of the operation section unit.

Claim 7 (Currently Amended): The ~~switch device~~ operating device according to claim 5, wherein each of the guide pins comprises a shaft and a guide roller, which is rotatably mounted on the shaft.

Claim 8 (Currently Amended): The ~~switch device~~ operating device according to claim ~~[[4]]~~ 3, wherein the top plate has a pair of annular guide ribs which are concentric to the top plate, have different diameters and define the guide groove.

Claim 9 (Currently Amended): The ~~switch device~~ operating device according to claim 8, wherein the operation unit has a first gear provided on a circumferential surface of one of the pair of guide ribs and the rotation-detecting section detecting section is arranged on the base section and comprises a second gear and a rotation-detecting sensor for detecting the rotation of the second gear, ~~and the operation unit has a first gear provided on the circumferential surface of the guide rib~~ and the first gear and the second gear being set in mesh with the second gear.

Claim 10 (Currently Amended): The ~~switch device~~ operating device according to claim 3, wherein the operation unit has a first gear on a surface which opposes the base section, the ~~rotation-detecting section~~ detecting section arranged on the base section which comprising the second gear set in mesh with the first gear and the rotation-detecting sensor for detecting the rotation of the second gear.

Claim 11 (Currently Amended): The switch device operating device according to claim 1, wherein the base section comprising a base part which supports the operation unit, allowing ~~the same~~ the operation unit to rotate, and a rotational drive section which is provided on the base part to move in a direction intersecting with the direction the operation unit rotates and which supports the rollers supporting the operation unit, allowing the ~~[[same]]~~ rollers to rotate, ~~said rollers supporting the operation unit~~; and a motion-detecting section is provided to detect the motion of the rotational drive section.

Claim 12 (Currently Amended): The ~~switch device~~ operating device according to claim 1, wherein the base section comprises a base part which supports the operation unit, allowing the operation unit ~~the same~~ to rotate, and a rotational drive section which is provided on the base part to move in a direction intersecting with the direction the operation unit rotates and which supports the rollers supporting the operation unit, allowing the ~~[[same]]~~ rollers to rotate, ~~said rollers supporting the operation unit~~; a motion-detecting section is provided to detect the motion of the rotational drive section; the operation unit has the first gear on a surface which opposes the base section; and the ~~rotation-detecting section~~ detecting section comprises the second gear arranged on the base part set in mesh with the first gear to move in the direction the rotational drive section is moved, and the rotation-detecting sensor for detecting the rotation of the second gear.

Claim 13 (Currently Amended): The ~~switch device~~ operating device according to claim 11, further comprising an annular cover rotatably supported by the base section and holding the operation unit at the inner circumference, allowing the same to move in axial direction.

Claim 14 (Currently Amended): The ~~switch device~~ operating device according to claim 13, wherein the operation unit has a fastening member, the annular cover has, at the inner circumference, an engagement member which positions the fastening member of the operation unit in ~~[[the]]~~ a circumferential direction and which is able to move in an axial direction to engage with and disengage from the fastening member of the operation unit.

U.S. Patent Application Serial No. 10/645,853
Amendment filed June 11, 2007
Reply to OA dated March 14, 2007

Claim 15 (Currently Amended): The ~~switch device~~ operating device according to claim 13, wherein the base section comprises a plurality of rollers which support the annular cover, allowing the ~~[[same]]~~ annular cover to rotate.

Claim 16 (Currently Amended): The ~~switch device~~ operating device according to claim 1, wherein a resistance which the operation unit receives when rotated with respect to the base section is set to be substantially ~~the same as~~ equal to a load which ~~[[the]]~~ a turntable of a record player receives when rotated.

Claim 17 (Withdrawn): A data-processing apparatus comprising:
a data-reading section, which reads data from a recording medium;
a data-processing section, which processes the data, read from the recording medium;
the switch device of the type according to claim 1; and
a process control section which changes modes in which the data-processing section processes the data, when the rotation-detecting section of the switch device detects that the operation unit is rotating.

U.S. Patent Application Serial No. 10/645,853
Amendment filed June 11, 2007
Reply to OA dated March 14, 2007

Claim 18 (Withdrawn): A data-processing apparatus comprising:
the data-reading section, which reads data from a recording medium;
the data-processing section, which processes the data, read from the recording medium;
the switch device of the type defined in claim 11; and
a process control section which changes modes in which the data-processing section processes the data, when the motion-detecting section of the switch device detects that the rotational drive section is moving.

Claim 19 (Withdrawn): A playback apparatus comprising:
the data-processing apparatus of the type defined in claim 17; and
a playback section that reproduces data processed by the data-processing apparatus.

Claim 20 (New): The operating device according to claim 3, wherein the elastic member is a spring.